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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,234	12/01/2005	Beat O. Blattmann	GC718-2-US	8676

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DANISCO US INC.
ATTENTION: LEGAL DEPARTMENT
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EXAMINER	
PROUTY, REBECCA E	
ART UNIT	PAPER NUMBER
1652	
MAIL DATE	DELIVERY MODE
08/23/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/524,234	BLATTMANN ET AL.	
	Examiner	Art Unit	
	Rebecca E. Prouty	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-19 and 23* is/are pending in the application.

4a) Of the above claim(s) *9-12 and 16-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-15,19 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claims 1-8 and 20-22 have been canceled. Claims 9-19 and newly presented claim 23 are still at issue and are present for examination.

Applicants' arguments filed on 6/8/10, have been fully considered and are deemed to be persuasive to overcome some of the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

Applicants presented a new claim (numbered claim 21) in the current response immediately following an indication claim 20-22 are cancelled. Thus the new claim is improperly numbered and should have been give the number 23. All other references to this claim in the instant action will refer to claim 23. Correction is required.

Claims 9-12 and 16-18 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 5/30/08. Applicants current response inquires about the status of claim 19 which as they indicate was previously examined in the Office actions of 8/20/08 and 6/11/09 and then indicated as withdrawn in the last Office Action without comment. This appears to have

resulted from applicants claim listing filed with the response of 11/20/09 having the status identifier (withdrawn) for this claim which the examiner relied on when examining the claims. The examiner regrets the confusion and claim 19 is included within the examined claims herein.

Applicants further argue that claims 16-18 which depend from claim 13 should be rejoined with the examined claims as the PCT rules provide that unity of invention is considered in the first place only in relation to the independent claims. However, as is clearly indicated in MPEP 1850 claims 16-18 are not considered dependent claims within the meaning of the term as used in the unity of invention rules. MPEP 1850 clearly states:

> Unity of invention has to be considered in the first place only in relation to the independent claims in an international application and not the dependent claims. By "dependent" claim is meant a claim which contains all the features of one or more other claims and contains a reference, preferably at the beginning, to the other claim or claims and then states the additional features claimed (PCT Rule 6.4). The examiner should bear in mind that a claim may also contain a reference to another claim even if it is not a dependent claim as defined in PCT Rule 6.4. One example of this is a claim referring to a claim of a different category (for example, "Apparatus for carrying out the process of Claim 1 ...," or "Process for the manufacture of the product of Claim 1 ..."). Similarly, a claim to one part referring to another cooperating part, for example, "plug for cooperation with the socket of Claim 1 ...") is not a dependent claim. [emphasis added]

Claims 16-18 all recite a phytase "produced by the method of claim 13" and thus do not in fact contain all the features of Claim 13 as these claims are not even to methods and thus do not comprise the steps recited in claim 13. These claims are claims that merely contain a reference to another claim but are not dependent claims as defined in PCT Rule 6.4.

Claims 13-15, 19, and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 (upon which claims 14, 15, 19, and 23 depend) is confusing in the recitation of "wherein said nucleic acid is at least 95% identical to SEQ ID NO:2" as SEQ ID NO:2 is an amino acid sequence and not a nucleotide sequence. There are at least two possible interpretations of what applicants intended to claim here the first being "wherein said nucleic acid encodes a polypeptide which is at least 95% identical to SEQ ID NO:2" and the second being "wherein said mature phytase is at least 95% identical to the mature phytase portion of SEQ ID NO:2". It is noted that while the first choice seems more similar to what applicant in fact wrote and thus seems more likely, this interpretation makes claim 19 incomprehensible since none of the sequences recited in this claim encode proteins that are at

least 95% identical to SEQ ID NO:2. The most similar of the listed sequences, i.e., SEQ ID NO:24, encodes a protein which is only 93.4% identical to SEQ ID NO:2. Claim 23 is similarly confusing in the recitation of "wherein said nucleic acid is at least 98% identical to SEQ ID NO:2"

Claim 19 is confusing in the recitation of "wherein said nucleic acid comprises a sequence selected from SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, and SEQ ID NO:33" as none of these sequences encode phytases which are 95% identical to SEQ ID NO:2. Furthermore, even if one assumes that this was intended to recite "wherein said mature phytase encoding sequence is selected from SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, and SEQ ID NO:33", the claim would be confusing as SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26 and SEQ ID NO:30 do not appear to encode mature phytases but the preprotein instead and even the mature phytase encoded by SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, and SEQ ID NO:33 would not be 95% identical to the mature phytase portion of SEQ ID NO:2. As such this claim has not been further examined as applicants intended meaning is completely unclear.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 13-15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Short et al. (US Patent 6,720,014) in view of Berka et al. (US Patent 6,221644) and van der Laan et al. The rejection is explained in the previous Office Action. It is noted that claim 23 is included in this rejection based on the possible interpretation of "wherein said nucleic acid is at least 98% identical to SEQ ID NO:2" meaning "wherein said mature phytase is at least 98% identical to the mature phytase portion of SEQ ID NO:2" as the mature phytase of Short et al. is 99.5% identical to the mature phytase portion of SEQ ID NO:2

Applicants argue that the examiner has failed to consider that the number of solutions proposed in the cited art and the

lack of guidance directing an ordinary skilled artisan to the claimed invention as Short discloses producing variants of the phytase by a wide variety of methods in addition to error-prone mutagenesis as recited in the instant claims and a wide variety of host cells for the expression of the variant phytase gene. However, the amount of additional teaching of Short et al. that are not within the scope of the claims is irrelevant to the inquiry of whether it would be obvious to modify one particular disclosed method of Short et al. Short et al. explicitly teaches methods of making variant phytases comprising error-prone amplification of a naturally occurring *E. coli* phytase nucleic acid, recombinant expression of the mutant nucleic acid (see for example column 7, lines 29-36, column 8, lines 11-17, and column 18, lines 41-48) and isolation of the mutant phytase. The fact that he teaches other methods of making variant phytase genes is irrelevant. Similarly Short et al. teaches that many host cells can be selected for use within this method including *Bacillus subtilis* and thus explicitly teaches methods of making variant phytases comprising error-prone amplification of a naturally occurring *E. coli* phytase nucleic acid, recombinant expression of the mutant nucleic acid in *Bacillus subtilis* and isolation of the mutant phytase. The fact that, for example, Short et al. also explicitly teaches methods of making variant

phytases comprising error-prone amplification of a naturally occurring *E. coli* phytase nucleic acid, recombinant expression of the mutant nucleic acid in *E. coli* and isolation of the mutant phytase in no way detracts from the specific teaching of Short et al. that is relied on by the examiner. The question at issue in the instant rejection is whether one of skill in the art would have found it obvious to select the signal sequence of van der Laan et al. for use within the method of making variant phytases comprising error-prone amplification of a naturally occurring *E. coli* phytase nucleic acid, recombinant expression of the mutant nucleic acid in *Bacillus subtilis* and isolation of the mutant phytase as disclosed in Short et al.

Applicants argue that Berka et al. teach that a signal sequence is not a necessary control sequence for expression. However, simply because a signal sequence is not necessary does not detract from the teaching of Short et al. that a signal sequence can be utilized. The teachings of Berka et al are relevant to the question of what signal sequence a skilled artisan would choose if they followed the teaching of Short et al. to utilize a signal sequence. Merely because a skilled artisan might choose to express without a signal sequence in no way makes expressing with a signal sequence not taught in the art. Furthermore, a skilled artisan would have been well aware

at the time of the instant invention that if one wished to secrete the phytase from the recombinant host that a signal sequence is necessary and that secretion of a protein of interest generally simplifies its isolation as secreted proteins are a small portion of the total protein produced by a host cell. Thus a skilled artisan would have in fact have a clear reason to choose to utilize a signal sequence even though Short et al. and Berka et al. teach that one can express a desired protein without one.

Applicants argue that Van der Laan teaches that a homologous production system was preferred to a B. subtilis host [for the expression of the alkaline serine protease disclosed] and that this teaching suggests that the signal sequence of the high alkaline serine protease may be ill-suited for function in a non-B*acillus alcalophilus* host. However, a skilled artisan would not understand this statement to suggest that the signal sequence would be ill-suited at all but much more likely that the promoter or other regulatory sequences would be or that the homologous host was preferred for other reasons. In fact Van der Laan et al. expressly state that the homologous host was preferred in part for its good fermentation properties which have absolutely nothing to do with the signal sequence. As such nothing in Van der Laan suggests that this signal sequence would

not be suitable for secretion of a protein within other *Bacillus* species and Berka et al. clearly suggest that many different *Bacillus* signal sequences are suitable for expression in all bacterial cells and thus clearly expects these to be suitable in other *Bacillus* species.

Finally applicants argue that Short et al. is directed to providing an improved phytase to use in foodstuffs for activity in the digestive system. As the ordinarily skilled artisan would know, the digestive system is an acidic milieu, the skilled artisan would have known that a phytase for such a system should have an acidic pH optimum and would not have been motivated to choose a signal peptide endogenous to an alkaline bacterium such as *Bacillus alcalophilus*. However, this is not persuasive as a skilled artisan would understand that the signal peptide would not alter the pH optimum of the enzyme at all as it will be removed during the secretory process. As such a skilled artisan would have no reason to believe that a signal peptide from this strain would not be suitable for use in any *Bacillus*. Furthermore, it is noted that Van der Laan teach that the signal peptide of the alkaline protease was comparable to other *Bacillus* signal peptides indicating that it does not in fact have any unusual features. For all the reasons give above the rejection is maintained.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rebecca E. Prouty whose telephone number is 571-272-0937. The examiner can normally be reached on Tuesday-Friday from 8 AM to 5 PM. The examiner can also be reached on alternate Mondays

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Mondesi, can be reached at (571) 272-0956. The fax phone number for this Group is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval

(PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Rebecca Prouty/
Primary Examiner
Art Unit 1652